

WHAT IS CLAIMED IS:

- 1 1. A method of changing the permeabilities of
- 2 tubular wrappers of rod-shaped products of the tobacco
- 3 processing industry, comprising the step of simultane-
- 4 ously changing the permeabilities of wrappers of a
- 5 plurality of products.

1 2. The method of claim 1, wherein said step
2 includes perforating the wrappers of $\underline{n} \geq 2$ products,
3 \underline{n} being a natural number.

1 3. The method of claim 2, wherein said
2 perforating step includes establishing a source of \underline{n} at
3 least substantially parallel laser beams, and directing
4 the \underline{n} beams upon $\underline{n} - \underline{x}$ oscillatable beam reflecting
5 mirrors to focus the \underline{n} beams upon the wrapper of at
6 least one product, \underline{x} being a natural number less than
7 \underline{n} .

1 4. The method of claim 3, wherein \underline{n} equals two.

1 5. The method of claim 3, further comprising the
2 step of moving the products in the course of said chang-
3 ing step and oscillating each mirror to thus focus the
4 beams upon the wrappers of moving products.

1 6. The method of claim 5, wherein \underline{n} equals two.

1 7. The method of claim 2, wherein said changing
2 step includes simultaneously perforating m selected
3 portions of the wrapper of each product.

1 8. The method of claim 7, wherein m \geq 2 and is
2 a natural number.

1 9. The method of claim 8, wherein said perforat-
2 ing step includes directing m substantially parallel
3 pulsating laser beams upon the wrapper of each product.

1 10. The method of claim 9, wherein said
2 perforating step includes simultaneously directing p
3 laser beams upon q partially reflecting mirrors to
4 reflect a first portion and to permit passage of a
5 second portion of each laser beam, and directing
6 the second portions of the laser beams against at least
7 one fully reflecting mirror, m being equal to $p(q + 1)$
8 wherein p is a natural number and q is a natural number
9 including zero.

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1 11. A device for changing the permeabilities of
2 tubular wrappers of a series of at least substantially
3 equidistant rod-shaped products, comprising:

4 means for emitting n laser beams; and

5 means for simultaneously directing the laser beams
6 upon the wrappers of n products, n being a natural num-
7 ber greater than one and said directing means including
8 n - x movable mirrors arranged to deflect a plurality
9 of beams making an acute angle the magnitude of which
10 is a function of the distance between neighboring
11 products of said series, x being a natural number less
12 than n.

1 12. The device of claim 11, further comprising
2 means for moving the products of the series along a
3 predetermined path and means for oscillating each mirror
4 to thus focus the beams upon the wrappers of selected
5 products in said path.

1 13. The device of claim 12, wherein said
2 directing means includes means for simultaneously fo-
3 cussing at least one discrete beam upon each of m
4 different portions of the wrapper of each of the series
5 of products in said path, m being a natural number ex-
6 ceeding one.

1 14. The device of claim 13, wherein said oscillat-
2 ing means includes means for oscillating the n - x
3 mirrors about a common axis.

1 15. The device of claim 11, wherein said mirrors
2 include $q = (m/p) - 1$ partially transmitting mirrors
3 arranged to split each of p incident beams into a
4 reflected first portion and a transmitted second
5 portion, and at least one fully reflecting mirror for
6 said second portions of the beams, p being a natural
7 number and q being a natural number including zero.

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1 16. Apparatus for treating smokers' products of
2 the type wherein a rod-shaped component is surrounded
3 by a tubular wrapper carrying a deformable strip, com-
4 prising:

5 a rolling unit having a plurality of surfaces
6 defining a channel and including at least one first
7 surface which moves relative to at least one second
8 surface, said channel having an inlet and an outlet;

9 means for feeding into said inlet successive
10 products of a series of products having tubular wrappers
11 each of which is contacted by the respective strip whe-
12 reby the wrappers are caused to roll due to contact with
13 said surfaces and to thus convolute the respective strips
14 thereabout in said channel; and

15 means for changing the permeabilities of the
16 wrappers during rolling in a predetermined portion of
17 said channel, comprising means for simultaneously per-
18 forating the wrappers of at least two products in said
19 predetermined portion of said channel.

1 17. The apparatus of claim 16, wherein said
2 channel includes an additional portion which is disposed
3 at said inlet and the strips are convoluted around the
4 respective wrappers in said additional portion of said
5 channel, said predetermined portion of said channel im-
6 mediately following said additional portion, as seen in
7 a direction from said inlet toward said outlet, said
8 perforating means being arranged to change the permea-
9 bilities of the wrappers of products at least in said
10 predetermined portion of said channel.

1 18. The apparatus of claim 17, wherein said
2 perforating means is constructed and arranged to start
3 the perforating of wrappers in said additional portion
4 of said channel.

1 19. The apparatus of claim 16, wherein at least
2 a portion of said channel has an arcuate shape.

1 20. The apparatus of claim 16, wherein said
2 rolling unit comprises a rotary conveyor having a
3 cylindrical peripheral surface constituting said at
4 least one first surface, and a stationary rolling member
5 having a concave surface concentric with and spaced
6 apart from said peripheral surface and constituting said
7 at least one second surface.